

# SUPPLEMENT.

## The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1230.—Vol. XXIX.]

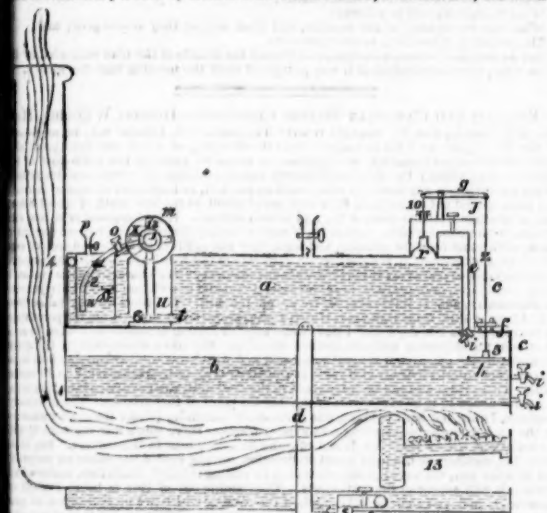
LONDON, SATURDAY, MARCH 19, 1859.

[WITH STAMPED.... SIXPENCE.  
JOURNAL UNSTAMPED. FIVEPENCE.]

### NEW AND EFFICIENT METHOD OF FEEDING BOILERS OF LOCOMOTIVE, MARINE, AND STATIONARY STEAM ENGINES, by which a GAIN OF TWENTY-FIVE PER CENT. POWER is added to the engine, and REDUCTION OF FIFTY PER CENT. CAUSED IN THE CONSUMPTION OF FUEL.

- 1.—By it the steam is completely condensed to a vacuum from the piston, by which there is a gain of 15 lbs. per square inch on the piston of locomotive engines, and 11 lbs. on the square inch of marine and stationary engines over the present method of condensing steam.
- 2.—A less pressure of steam is required in the boiler to produce the same effect, and consequently less fuel is required.
- 3.—The boiler is fed with the hot water from the condensed steam, and by this means, there is a great saving of fuel. Steam is generated from the hot water of condensed steam with less fuel and in less time than from water.
- 4.—The water from the condensed steam being returned into the boiler, when the boiler has been once filled it requires a very small supply of fresh water for a number of hours, the filling of the boiler is much less.
- 5.—A less weight of water and fuel is required to go double the distance.
- 6.—By the complete condensation of the steam, all that noise is avoided which has hitherto prevented the running of locomotive engines over common roads, and constitutes a greater part of the nuisance of railway engines being put on common roads.
- 7.—The waste of steam is so little, that steam vessels may take a sufficient quantity of fresh water with them to go to America, India, or Australia, and thus explain away the prejudicial effects of the salt water on the boilers, so that one boiler will last as long as two, besides the saving of the loss of time and expense in repairing and replacing boilers.
- 8.—By this method the feed pole and air pump bucket are rendered entirely useless, the power employed to drive them is given to the engine, to do more useful duty.
- 9.—By this method, also, the explosion of boilers is rendered next to impossible.
- 10.—That with the 25 per cent. power being added to the engine, together with the saving of 50 per cent. caused in the consumption of fuel, all railways will pay large dividends. The filtering beds in marine ships will also give place for general cargo and passengers, and the fact of the boilers being fed with fresh water is a sufficient reason to commend its general adoption. The construction and simplicity of the apparatus is so simple that it will cost a very small sum of money to be attached to any engine.

This invention is patented by Messrs. Pascoe and Thomas, of Chacewater, Cornwall.



#### DESCRIPTION.

A reservoir to hold the water to feed the boiler.  
A boiler of any size or shape, with tubular fire-bars and bridge, which can be attached to any boiler, instead of blocks of cast-iron, and walls of brick, and which are supplied with water from the boiler.  
A feed view of boiler and reservoir.  
A pipe conveying water from the reservoir into the boiler.  
A pipe conveying steam from the boiler into the reservoir.  
A safety-valve.  
A flat swimmer in the boiler.  
A water cistern within another cistern (3).  
A steam cistern, taking the steam from the exhausting passages from the cylinder conveying it into the condenser.  
To be connected with the exhausting passages from the cylinder.  
A loop upon the swimmer, and connected to one end of the lever in the boiler with a pipe connecting cistern 3 to a part of the reservoir a, and conveys the water from one to the other.  
A rod connected to the valve r, and to the lever.  
A rod connected to the valve s, close stop-cocks f and g, take off the bonnet, and look to the valve-cocks s and o are for regulating the supply of water to the condenser. Stop-cock i is opened if the steam should be let out of the reservoir.  
Air-escape passage.  
A handle for regulating the supply of air to the condenser. First supply the reservoir and boiler with water through the stop-cock p; light the fire, raise the steam, the engine, and drive the condenser with a belt, when the steam from the exhaust-passages (4) will return to the condenser, and be condensed to water, and will return to reservoir through the valve i, and into the boiler, as below described.  
The water in the boiler sinks under the swimmer, the swimmer will sink also, and the rod at the other end of the lever connected with the valve r, and let the steam valve s, until the swimmer is at its proper level, when the valves r and s will close, the supply of air is regulated to the condenser by the air-cock or valve m.  
Under the apparatus self-acting, the stop-cocks, f & g, and o or n, must be left open.

General description of Messrs. Pascoe and Thomas's invention appeared in the Mining Journal of Feb. 19, and we shall shortly give the particulars of some practical results, and have an engine working to demonstrate its value.]

### THE ONLY GAUGE GLASSES THAT WILL STAND A PRESSURE FROM 100 lbs. TO 500 lbs.

Edinburgh, Perth, and Dundee, and Scottish Central Railways,  
Locomotive Department.—Perth, Dec. 30, 1858.  
I have now used the Glass Tubes for Water Gauges, made by Mr. Toney, for three years, and can recommend them to railway engineers. I have not seen any equal to  
ALEX. ALLAN, M. Inst. C.E., Locomotive Superintendent.  
used on the London and North-Western, Eastern Counties, Midland, and all the principal railway lines in Great Britain. Enoch Toney, Canal-street, Perth.

THEODOLITES, LEVELS, CIRCUMFERENTERS,  
MATHEMATICAL DRAWING INSTRUMENTS, SCALES, RULES, TAPES,  
SQUARES, &c.—JOHN ARCHBUTT, 20, WESTMINSTER BRIDGE ROAD, LAM-  
BERT, near Astley's Theatre, respectfully calls attention to his stock of the above arti-  
manufactured by superior workmen. The prices will be found considerably lower  
than charged for articles of similar quality. An illustrated price list forwarded free  
on application: 8 in. dumpy level, complete, six guineas; 10 in. ditto, eight guineas;  
ditto, ten guineas; with compass, one guinea each extra; best 5 in. theodolite, di-  
agonal silver, eighteen guineas.

### ECONOMIC PRODUCTION AND USE OF STEAM.

#### THE HISTORY OF A PRACTICAL INVENTION.

Sir,—May I hope that the subject of this letter has sufficient public im-  
portance to obtain a place in your Journal, as on considering the effect of  
vested interest and jealousy at home, and the aspect of affairs abroad, it does  
seem as if the present is not the time when any interest should be allowed  
to suppress any really valuable and comprehensive improvement, or de-  
fraud the author of such improvements of his hard-earned and rightful re-  
ward, and the public of the benefit of his experience. The steam-engine is  
one of the chief resources from which the English nation derives its sub-  
sistence, and upon which it is dependent for its defence and progress. To  
a consideration of its abstract principles and its mechanical structure I, in  
1838, first directed my attention, with no other object at that time than  
the pleasure derivable from its study and investigation. This led to my  
making numerous experiments, for the purpose of elucidating the principles  
involved in its action. These experiments convinced me that the steam-  
engine, with the same given consumption of fuel per hour, could be made  
to produce threefold the available power it was then doing; also be made  
to work with nearly as much economy with atmospheric air as the only  
medium of condensation as when water was used for that purpose; and  
that by the method of condensation thus arrived at, which, by its being  
applicable in air or water, would at the same time that it produced the vac-  
uum enable us to retain the steam water for the use of the boiler, by which  
the deposit which fresh supplies of water occasion would be prevented.  
From this it also became obvious to me that strictly tubular boilers could  
be made both practicable and desirable. These conclusions, combined with  
others relating to a proper adaptation of the engine, so as to suit it to high-  
pressure steam, and its expansive use, for all purposes, constituted the out-  
line of the improvements which then seemed to me to be required to enable  
us to utilise the very large quantity of heat that was then needlessly thrown  
away, and also to put an end to the destructive boiler explosions which  
had hitherto accompanied the use of the steam-engine.

To work out complete, and put into practical operation, the above out-  
line of improvements, I have devoted 18 years of the most anxious, arduous,  
and unrequited labour that ever fell to the lot of any man, with nearly all  
the beings for whose good I have laboured, either actually obstructing me  
in every possible way, or utterly indifferent about what I was doing, or  
how I was being treated. Thus circumstanced, my only encouragement  
has been the complete success, scientifically and practically, which has at-  
tended my labours, so that my early anticipations are more than realised  
in the combination of simple means, which have placed it beyond all reason-  
able doubt that in the application of the steam-engine to marine purposes,  
for instance, 1 lb. of coal can be made to produce as much available power  
for propelling the ship as 6 lbs. of coal are doing as applied at present,  
though in the appended table I have only put the saving of coal at half this  
amount. It is possible my opponents may continue to mislead the public  
for some time longer upon these points, but as certainly as I know the sun  
has shone I know that these statements of mine are correct. The mode  
of procedure that my opponents pursue upon these points, to give plausi-  
bility and effect to their obstructive desires, is to represent me as incapable  
of forming a sound opinion, for want of, as they say, practical experience;  
but the very opposite is the truth, as there is not another engineer in Eng-  
land who for 18 years has had the practical experience in this department  
of engineering that I have had. No men know better than engineers that  
in all other practice except my own the principles which from the first have  
been united in my engine are not to be found complete in any one of the  
three principal classes of engines—the Locomotive, the Marine, and the  
Cornish—and that the making and working of each of these classes of en-  
gines are for the most part distinct branches of manufacture, carried on by  
particular makers, who are well known to confine their practice and their  
experience each to the respective class of engine it is their business to supply  
the public with, and that the same is the case in relation to those who work  
such engines; consequently there are but very few persons in England that  
have had practical experience with steam-engines, in which all the good  
qualities of these three systems are combined in one and the same engine.  
For 16 years they have been so combined in my engines, and not only so,  
but all the good qualities which the three systems possess are much ex-  
tended and simplified, so that the portability of the locomotive is combined  
with the economy of the Cornish, and adapted to all purposes and places.  
Hence, whenever my opponents attempt to meet me in open discussion  
they are always in the dilemma, that if they deny the economy of my en-  
gine they virtually do so of the Cornish, and if they dispute its modernised  
structure they cannot defend the locomotive, and the recent improvements  
and practice of the marine engine. As Cornwall lies out of the way, it  
was preferred, in several of the early years of my struggle, to doubt the  
economy ascribed to the Cornish engine, but that is now admitted. If, in  
addition to the foregoing, it be remembered that for 16 years I have been  
making and working my engines—that on me personally has devolved the  
duty of encountering every scientific and practical difficulty relating to  
their construction and every day work, and that during the whole of this  
long period I have been under the strongest possible inducement to watch  
for and detect every indication which, scientifically or practically, could  
lead to a sound judgment.

The simple truth is that such has been the opposition in kind and diversity  
which for 18 years I have encountered, that the English public can form  
but a faint conception of its subtle character; I will, therefore, not trust myself  
further to explain it, lest the truth should seem exaggeration, but pass on  
to give a glimpse of a few instances illustrative of my practice and its results,  
which will enable the reader to form his own opinion, and judge for himself  
how far my statements are or are not likely to be correct. At Birthing-  
ham, in 1842, in the every day working of a five-horse engine, I put before  
the public a practical proof, which not only demonstrated that the steam  
from the steam-engine could be condensed by the atmosphere—the vacuum  
produced and the steam water retained for the use of the boiler, but that  
the steam-engine need not require more than one gallon of fresh water per  
horse-power per day, this being used to replace the loss of steam at the  
stuffing-boxes, &c. To duly appreciate these results, it should be remem-  
bered that the Bolton and Watt engine requires 1380 gallons of cold water  
per horse-power per day for condensation. Moreover, that even with this  
large supply of cold water, which necessarily restricts this engine to com-  
paratively few localities and purposes, it is not possible to obtain one-third  
the power at the same cost in fuel as by my engines, when the steam is so gener-  
ated and used as I use it. During the last 16 years there has been no end of dis-  
cussion on the use of steam expansively; but the public knows the whole essence  
and commercial value of the subject, when it comprehends that to get power  
out of steam by expansion, it is first necessary to put the power into it by  
compression, and also to prevent any, or at least as little as possible, of the  
steam condensing before it has done its work in the engine, and has passed  
into the condenser. Now, as this compression of the steam costs nothing,

it being done by the same heat that converts the water into steam, all that  
is required is a boiler suitable to generate it with safety and economy, and  
an engine adapted to use it effectively. If these are provided, and pro-  
perly managed, then economy is as much a matter of certainty as that a  
stone thrown up into the air will fall to the ground. In 1843, I set a  
second engine, of 20-horse power, to work, having its steam condensed by  
the atmosphere, which continued in every day work from 1843 until 1849;  
this engine produced still better results than the former one of 5-horse  
power, the vacuum being steadily maintained at from 20 to 24 in. of mer-  
cury, and the economy in coal was thus early reduced to less than 3 lbs.  
per horse-power per hour. Recollect this was with the atmosphere alone  
as the medium of condensation. After this I made, and in 1848 and 1849  
tested a 40-horse engine, still condensing by the air; this engine gave still  
better indications than its two predecessors of 5 and 20-horse power, but  
such was the prejudice and opposition I had to encounter, that I was placed  
in the position of the person who is said to have offered sovereigns as a gift  
upon London Bridge, or the man who brings the water to the horse but  
cannot make him drink.

Having thus, as far as science and practice could accomplish such object,  
proved the value of this part of my improvements, I knew it was folly in me,  
in my then isolated state, to further attempt to stem the tide of prejudice  
and opposition which this part of my invention at that day had opposed to  
it. Owing to these difficulties, those who from 1841 up to 1848 had with  
me borne the cost of bringing the result to this point, now became so fully  
convinced of the difficulties which such an opposition presented that they  
determined to withdraw; the result of such determination on their part was  
that I took the whole responsibility upon myself, and a debt of 2000*l.*, which  
I was obliged to pay within six months. From this time until the present  
I have had to fight my way as best I could. Up to the time of my partners  
leaving me, we had only sold one engine, of 4-horse power. In such a  
position, compelled to struggle alone with a thing of this kind, and with the  
expenses and cares of a manufactory, I foresaw that it required the utmost  
caution on my part to avoid the Bankruptcy Court. I, therefore, for the  
time abandoned the use of my air-condensers, and turned my attention to  
perfecting the other parts of my invention in connection with the condensa-  
tion in water. My opponents seeing the position I was now in, have taken  
care to deprive me of the assistance of either capitalist or company. The  
way this has been done is very simple; as on my applying either to a capi-  
talist or to those who could form a company, the first step in either case  
has invariably been that the parties so applied to have referred to some  
engineering authority, and, of course, the reply has uniformly been, "Do not  
by any means have anything to do with Craddock's inventions." This has  
been the practice now for ten years. In such case it, at first sight, seems  
a puzzle how I could go on manufacturing and improving my engines; it  
has been done, however, in the following manner:—Their economy and  
other advantages have been so obvious that persons who have had oppor-  
tunities of seeing them in work for a length of time have been able to see  
through the haze of engineering opinion, and have desired me to make  
them such engines, they advancing the money to enable me to do so. In  
this way I have made and set to work as many engines as in their aggre-  
gate power are equal to 200-horse, the power of the separate engines vary-  
ing from 5 up to 100-horse. I need not remind men of business that so  
to make engines, and introduce such improvements, was to give my labour  
for nothing; which has been the case, but it has had this recommenda-  
tion—that by such means I have been enabled to perfect my improve-  
ments, and, having done that, I was glad, after 16 years of such manufac-  
turing and practical experience, to escape from a business which was  
killing me by inches.

It is not easy to pourtray, or even give an approximate conception, of the  
combined difficulties which, under such circumstances, the scientific, the  
practical, and the commercial requirements have entailed upon me in the  
prosecution of such matters as I have so long been engaged in. Let those  
who desire to form a notion upon this point suppose such an influence as I  
have referred to to have deprived Watt of the assistance of Bolton, and then  
picture to themselves, if they can, how enormously the difficulties of Watt  
would thereby have been increased, and how slow must have been his pro-  
gress, even if he had not abandoned his invention altogether. What, if he  
had abandoned his invention? is the latent thought this will suggest to  
many. The secret once known and applied, who cares what becomes of  
its author, as there are plenty of appropriators and pirates ready to reap  
the reward, and greedily waiting for the opportunity? Having done their  
share in the prosecution of the author, who can say they are not entitled  
to the spoil?

The following table refers to a 500-horse marine engine of the common  
construction, and the coal required for a 14 days' voyage:—

Weight of engine .....	Tons 105	Water in boiler .....	48
Weight of boiler .....	78	Coals for 14 days' steaming 387 =	618 tons.

With my improvements the 500-horse marine engine and the coal re-  
quired for a 14 days' voyage are represented below:—

Weight of engine .....	Tons 76	Water in boiler .....	6
Weight of boiler .....	36	Coals for 14 days' steaming 129 =	147 tons.

On an inspection of the foregoing comparison, it will be seen that in a  
500-horse marine engine, with its supply of coal for a 14 days' voyage,  
the unprofitable load is reduced by 371 tons, and the paying capacity of  
the ship is thereby increased by that amount. What the rate per ton for  
goods by first-class steamers between London and New York is now I am  
not aware, but during the time of the Russian war it was 6*l.* To illustrate  
the case, I will suppose it to be 5*l.*; at such rate the increased tonnage  
amounts to the sum of 1855*l.* per voyage; to this must be added the saving  
of 258 tons of coal, which, supposing it to cost but 3*l.* per ton, gives a  
total gain on each voyage of 2113*l.* If such vessel steam but 258 days out  
of 365 the gain per annum is 33,808*l.* The cost of my engines is even  
less than that of the common engine; but if we put the cost of either  
of them at 20,000*l.* for the 500-horse engine it is seen that a sum approach-  
ing double the cost of the engine is saved in one year; thus stands the  
comparison as stated in the tables. But, as before said, the comparative  
saving of coal will be much more in favour of my engines than is given in  
the tables. If we carry this mode of illustration to the whole marine steam  
power of Great Britain, including naval and mercantile, we may, in round  
numbers, put such a power at 200,000-horse, which will give 13,523,200*l.*  
sterling as the gain per annum. My opponents may take what exception  
they please to the above figures, but, as sure as they and me exist, the  
day must come when the practice of all maritime nations will confirm the  
general accuracy of my statements; and it concerns the English people to  
see that they are not lost in reaping the benefit of such improvements.

In a leading article that appeared a fortnight ago in the *Engineer* it is  
stated that every ton of coals saved upon an Australian voyage is equal to  
a gain of 9*l.*; this includes the value of the coal and its freight, and the  
coal is there set at 3*l.* per ton. If this mode of estimating the gain be ap-  
plied to my engines the result will not differ materially from that I have  
given. In the article referred to it is stated that whilst, by the injection



mode of condensation a 11 lb. vacuum can be obtained, the surface mode of condensation will give but 8 lb. In these two systems of condensation, as in most other things, practical results differ according to the knowledge and experience of those by which such results are obtained. I have had surface condensers of my principle and construction at work in water for 10 years, and have found no difficulty in getting a steady vacuum equal to 14 lb.; and if there be one place better suited than another to obtain a good vacuum it is a steam vessel, as there is sure to be plenty of cold water at hand for condensation.

In 1847, after a careful examination of what the nation might gain by these improvements, I stated it at 20 millions sterling per annum from all the departments in which the steam-engine was used; this estimate, I am quite certain, understates the case. On reflecting upon our ships of war, with their present boilers and engines, it has often occurred to me, and I think it often must do so to the naval officers when they reflect upon the present marine boilers, containing, as they do, from 40 to 60 tons of explosive matter, which a cannon ball may at any moment set at liberty. Such enormous magazines of explosive matter are treacherous helpmates, which, when most required, may become most destructive enemies, and pour forth their enormous contents to the destruction of those on board, and, in addition, leave the ship powerless for want of steam when those that remain able to use it most require it. A glance at the tables will show how greatly my boilers reduce this objection, as it is there seen that the explosive matter is reduced from 48 tons to 6 tons; and, in addition to this, such are the facilities of subdivision that my boilers present that this 6 tons of explosive matter can with equal effect, for all desirable purposes, be divided among 90 small boilers, each acting independent of the others. In such case if a cannon ball cause the liberation of the contents of one of such boilers, owing to the small quantity of explosive matter it contains and the strictly tubular character of its construction, the explosive matter would leave the ship merely as a squib, and the remaining 19 boilers continue as effective as ever for use. Important as are the above advantages the following are not less so, as by these boilers and engines a ship, or a fleet of ships, could remain at sea under steam for a threefold time, or, what may be of equal importance under the emergency of naval warfare, it, or they, could for the same time command a threefold power, as my boilers and engines are adapted to work at any pressure and any degree of expansion—from that of 20 lbs. to that of 200 lbs. pressure; and, at the same time, owing to the strictly tubular character of the boilers they are incomparably more safe with steam at 200 lbs. pressure than are the present boilers with steam at 20 lbs. pressure.

To the foregoing recommendations are added the facility which my boilers present for quickly getting up the steam, or changing it from one pressure to another. On a comparison of the time requisite to get up the steam, hours are almost reduced to minutes, as the steam can be got up to 200 lbs. pressure in my boilers, if it be desired, before the fires are fairly alight in the present. Many will conclude from this that I must have the steam unsteady in my boilers, if I can thus get it up so quickly; but there are numbers who know, and any one might know from one day's observation of the boilers in practical operation, that in no other steam-boiler is the steam maintained so steadily at its desired pressure as it is in these. If it be desired it can be kept so as not to vary more than 1 lb. in 100 lb. pressure during the day: this is effected by a self-regulator, which governs the admission of air to the fuel in accordance with the pressure of the steam, and wants of the engine. I cannot here go into further detail, but pass on to observe that for gun-boats and steam-rans these improvements present the very means that are required for success—great power with little weight and bulk in the machinery and coals requisite to obtain it, and the means of quickly producing great power at the opportune moment most favourable to success.

I can easily imagine a general exclamation—"This news is too good to be true!" To such I reply, that I have never been in the habit of making public statements without first assuring myself that such were practically, as well as scientifically, correct; as I have had a most critical, scientific, and practical opposition, which for 18 years has been on the alert to expose any, even the most trifling, error of mine when they could find it. This has made me prove everything upon which I have ventured to make any public statement, and consequently I have not given my opponents much to exult over in a public manner. And in relation to my knowledge of steam and the steam-engine, if I do not understand the subject after all the practice I have had, and the attention I have given to it, all I can say is that it betrays in me great stupidity, and that it is rather marvellous that I should have succeeded in all the improvements relating to the steam-engine that I have taken in hand. Let the public, therefore, give to me that measure of credit it is accustomed to give to men who have had much experience, and have accomplished difficult undertakings, in spite of adverse circumstances; and let such credit induce it to make a truth-seeking enquiry into that which is essentially to its interest. T. CRADDOCK.

#### CORNISH MINING MAXIMS.—No. XI.

"Too many cooks spoil the broth."

By many hypocrits our claim to this maxim as a Cornish mining idiom will be looked upon as trespassing out of our legitimate limits, but to the Cornish miner its adaptation is peculiarly fitting and appropriate. In none of the whole round of trades and professions is it more applicable, nor in them are there to be found a greater number of professors, whose *quasi* abilities are more loudly trumpeted forth to the world, or any in which private advice, by the same caterers for the public appetites of novelty and scandal, are more assiduously and greedily sought. Let us try our hand at actually practised and every-day facts, and see if we cannot fully establish our claim.

Instances have so frequently come under our notice that we doubt not all who are engaged in mining affairs have witnessed the baneful effects of the variety of opinion—some actuated by the desire of being thought more able because differing, some from a mere innate spirit of contradiction, but by far the greatest number from the hope of personal benefit. There is yet another great source of the success of this species of interlopers. Savage adventurers too frequently rush into speculations from that unfortunate but instinctive motive which makes man, like all gregarious animals, follow their leader, and where the rush takes place they, of course, rush too, even though they be warned of the consequences. Ruin, as a matter of course, follows. In their distress they, as a forlorn hope, call in the advice of one of the "cooking" fraternity, who, knowing his business (like a peripatetic quack), flatters the consulting party, by giving him his own way, and fanning the growing flame already heating his brain, depressing his energy and spirits. So prone are men generally to listen to any opinions that are in harmony with their own, that they dub those who coincide as very clever fellows: they lavish patronage and favours with a liberal hand on the fawning hypocrite; whilst the plain-spoken, honest, upright man, though doing his best for his employers, is disbelieved, and treated at first with neglect, followed by indignity and contempt, as the insidiously distilled poison takes effect on the overweening, unconscious victim.

By these means the best constituted mining companies have been ruined. Let a disappointed shareholder but once consult one of these gentry, and he will cook a mess out of a mine as surely as a lawyer will make a Chancery suit out of a disputed will, or a doctor make a bill out of a rich hypochondriac. To the pedantic pedagogue a wealthy client is an invaluable windfall. All the selections he has made, and all the investments he may anticipate making, have been conceived in error, and carried out with imbecility.

In the working department of a mine the mischief is still worse; for here the same principles act with tenfold violence, and the slightest fault, real or supposed, on the part of the manager or agent, is magnified into the most tremendous villainy by the poisoned mind. We could instance one case in which a sawyer on a mine was apprehended by the cooking manager for carrying home a few chips in his dinner basket, who, by the aid of his cooking apparatus, had represented in his report to the shareholders at Leeds that a systematic robbery of timber was being carried on, and that he had actually detected sundry pieces of valuable wood being conveyed from the mine. Clever fellow this, of course. The captains and agents were blamed, and by the poisoned adventurers were boldly charged with either winking at or encouraging such nefarious doings; whereas, a strict investigation which was made exposed the truth, and the cook was unmasked: but had the "leprous distillment" fallen on the ear of a less energetic man, the consequences might have been disastrous; the adventurer might have silently disposed of his interest at a ruinous sacrifice, too happy to have escaped from a nest of thieves.

We might multiply and vary the proposition and adaptation of our motto

*ad infinitum*; the doing so is so simple, self-evident, and easy, that we leave the task, and beg our readers to apply the moral of the proverb; they may rely on its truth. Mystification in mining is sufficiently prevalent without the aid of cooks, particularly "too many." How much would have been spared to East Russell had cooks been discarded? How many pangs and heart-burnings would have been saved—how many angry epistles have been left unpenned, had this moral been acted on? We pen the Maxim on this occasion, as we know of a property really valuable that is on the eve of destruction from this evil, cautioning them that one good cook is sufficient in a kitchen, and one good tailor enough for one suit—that the axiom is good in their case peculiarly, that it has been proved so in general practice, and that they should take care how they proceed; to learn from experience, and take heed in time. We hope they will, as it is intended they should, profit by our Maxim, which is as much Cornish as English, that "Too many cooks spoil the broth."—G. HENWOOD.

#### CORNISH MINE PHOTOGRAPHS.—SECOND SERIES.—No. IX.

"ALLOTING SHARES IN THE OLDEN STYLE REVIVED."

Solomon says "there is nothing new under the sun," but had a stranger witnessed a scene we recently beheld he would have certainly deemed the sacred sage in error. We would we had the descriptive powers of a Dickens to portray the scene; but even that being the case, it could be but faintly delineated: the reality surpasses the most vivid pencil, or most ludicrous caricature. In our boyhood we had heard of such doings, but never witnessed, and never wish again to witness, the like. It proves the old Cornish spirit is not dead; it is still vigorous as ever. Our readers may well almost doubt the truth of our picture; we pledge our honour it is literally true, and could we but present the grotesque *dramatis personæ* the effect of their introduction would add doubly to its value.

The mine was "got up" solely as a Cornish company, by a spirited mining captain, who had been abroad, and had returned with a considerable sum, the result of his persevering endeavour and toil. The magic of wealth, or supposed wealth, as a matter of course so universal, was not exceptional in this instance. The capitalist soon applied for and obtained the lease of a valuable mining sett in the immediate locality. Having the money to set to work, men were employed to clear up the old workings; lodes were discovered; a shaft was sunk on a supposed lode—a really splendid gossan, with rich copper ore, soon found. The proprietor soon installed himself as Capt. R., chief manager of the mine *pro tem*. A well qualified secretary was invited to join the speculation, who readily embarked in it, introducing a large number of powerful and influential parties into the undertaking. The mine being surrounded by some of the richest mines ever worked, whose returns are almost deemed fabulous (amounting to many millions), soon attracted considerable attention, particularly as the discoveries were deemed so eminently satisfactory by all practical miners who had visited the spot. This was its state at our first visit to the mine, and we vouch for its accuracy. From this time, daily visits to the rude little wayside inn of vehicles of every description evidenced the interest the mine was exciting. Applications for shares literally poured in—were begged for, and many were they who would gladly have taken 100, but who could procure no more than 10.

But the course of human affairs never did, and probably never will, run smoothly: there became two parties, owing to a quarrel and want of "compatibility of temper," we think the Divorce Courts term it. So it was at this mine; the two interests—the captain's and the purser's—exerted themselves to the utmost, and with the most virulent and determined hostility.

At length it was resolved to hold a meeting, the rival interests each insisting on his right of dictation and management. On the appointed day a dinner was to be held on the mine, for which each claimed a right to and did cater, and well it was so, as the sequel will show. Duplicates of everything were provided, and each party invited his friends and patrons as guests. On this important day, when the future management of the mine was to be decided, hours before the time appointed crowds of pedestrians, equestrians, and vehicles of all sorts might be seen hurrying to the scene. Groups were to be noticed traversing the various parts of the sett, and descending on the probabilities of success, but all regretting there was a division in the camp. It seemed universally accorded that the mine itself was a fair speculation.

There being no mine buildings large enough to hold a tithe of the assemblage, adjournment to a little inn hard by became absolutely necessary, the largest room of which was soon crowded to suffocation.

The secretary announced that no shares would be recognised but such as were there and then produced, and the deposits paid; on this, the whole number not being forthcoming, it was resolved that the shares of the company should consist of the number now applied for, and that no more be issued. The meeting then proceeded to examine accounts, to appoint officers, &c.; but, ye Gods, what a scene! The jargon at Babel would have been comparatively intelligible; both parties, and all at once, urging their respective claims to respect, at the same time vilifying the other; vociferating, pestilentiating, and making confusion worse confounded; creating such delay, that it occupied five hours to accomplish what one hour's calm reasoning would have effected—a reconciliation and reappointment of the agents in their respective situations, and a determination to erect the engine forthwith.

The company were then requested to leave the room, that the cloth might be laid for dinner. But not so. A seat at that board was too valuable a possession to be vacated. The double invitation had congregated a crowd of at least 150 hungry men, most of them miners, farmers, and tradesmen from the neighbouring towns, who had been sharp-set from 8 A.M. "No, no!" was the reply; "bring here the articles, we'll soon lay them," which, in truth, they did; not one-half could be accommodated with seats, much less knives, forks, or plates. Huge pieces of beef, legs of mutton, hams, pies of all descriptions, and of gigantic proportions, soon vanished as if by magic. The rich merchant, the surgeon, the adventurer, the invited and uninvited guest, had each to carve for himself, and struggle as he best could for a seat or a scramble. It is no joke to spend ten hours on a bleak down, at the distance of five miles from a town, on occasions like this. It was suggested that as one party dined, they should retire for the next. "No, no! Where's the grog?" A seat was again far too valuable a possession to be vacated. The poor purser's patience was sorely taxed; for had he for one moment vacated his seat, the place had known him no more. Every room in the place was filled to repletion.

Decanters of spirit were placed on the tables to be but emptied in a trice, refilled again and again with a similar result. This scene of revelry continued until many could literally carry no more, and the mob began to disperse. The quantity of spirituous liquors provided for the occasion though ample and liberal, was, as the miners say, soon in "fork;" additional gallons were obtained from the inn until their stock was exhausted, and two gallons had to be fetched from an inn at a distance of a mile or two. A more incongruous mass never before congregated, or one which was more difficult to control. However, all ended well; the purser got his calls well paid up, and, but for the double *contretemps*, all would have been well. The jolly old Cornish custom of a good dinner and good friends constitutes a good company and creates good and ready payments of calls, but on this occasion out-heroded Herod; instead of being what it should have been it was more like a bear garden than a feast, and a drunken revel than a meeting for business.

Happily such scenes, as we have before said, are now extremely rare; we had heard of such things in the olden time, but scarcely believed them possible; we saw it, and, therefore, record it as an extraordinary and rare occurrence. It is scarcely to be credited that at a mine meeting at this day more than 12 gallons of spirit, independent of ale, porter, and quantities of lemonade, &c., should have been consumed, yet this was done, and declared by many to be the good old Cornish mining times coming again.

Gentle reader, let us now pause, and consider that all this worse than useless extravagance arose from that very source which has been the utter ruin and destruction of so many, and that the expenses must be borne by the mining companies themselves. Quarrelling and division were the cause of this scene of folly, recrimination, and delay. Instead of promoting the interests of the mine it militated against it most materially. It teaches, or should teach, promoters of mines that indiscriminate invitation is not true hospitality, or lavish expenditure the true means of securing respect.

We had reserved this paper until the novelty and fame of the well-known meeting had settled down into partially a matter of local history and scandal; but we assure our readers that such scenes were once quite common, and the rule; we rejoice to say they are now the exception, and point to this as a beacon and warning against quarrelling and party spirit, which leads to equally great, if not more serious, excesses. GEORGE HENWOOD.

#### THE "PITMAN'S PROVIDENT SOCIETY."

[FROM A CORRESPONDENT.]

Such measures are now being taken in the North for the establishment of an institution which, whilst it will tend very materially to make the working colliers a more united body, will confer the greatest benefit both on the collier and his family as are more likely to be attended with success than any previous effort; and we trust no unforeseen difficulty may arise to check the most perfect development of the scheme. The constitution of the PITMAN'S PROVIDENT SOCIETY is so far advanced that a meeting convened by the promoters was attended by a large number of persons having considerable interest in the welfare of the working collier, and facts of the most encouraging nature, which the provisional committee were enabled to put forth, augur well for success. It could scarcely have been hoped that so great a body as the colliery workmen could be induced unanimously to approve of an entirely new association, but it is most prejudicial must admit that the feeling of most of the workmen is favourable to the institution.

The "Colliers' Union" is in no way interfered with; and it is proposed to give the colliers the fullest power over the funds contributed by them, although provision will be made for enabling the masters to aid the miners without in the least sacrificing the independence of the institution. Mr. Weatherly (the secretary) gave an interesting account of the steps taken by himself and the committee since the previous meeting. Appeals had been made to many of the collieries; meetings had been held at Huddersfield, Dudley, Hasleridge, and elsewhere; and he himself had taken a circuit of the Northern district, and personally communicated with a great number of men. In the course of his circuit he met with various opinions, but he had never spoken to any one on the subject without convincing him that the proposed society was a good thing. That the working collier requires only to have a matter clearly stated to understand what is to his own advantage and what is not, is apparent from the assertion of Mr. Weatherly, that many of those most prejudiced at first, when they came to reason about it approved the scheme, and gave money to support it. He had never asked any help from the masters in the undertaking, though he could not see why, if they received help from the masters, they need lose their independence. Now, we can well understand that the permanent success of the institution depends mainly upon its keeping itself distinct from every other association, as by that means the Pitman's Provident Society will secure the utmost co-operation of the masters. The opponents of the new institution expressed their conviction that the movement was got up by the masters to save themselves from paying smart-money; but the answer to this was, that the masters had nothing to do with it beyond giving it any voluntary support, and that the management of the society would be in the hands of the working men themselves, whose claims upon the employers in case of accident would not be lessened in any way. Letters showing the favourable feeling which the masters entertained towards the Provident Society were read from Messrs. Johnson, Joseph Pease, and Thomas Wood; whilst an equally satisfactory expression on behalf of the men was observable in the speeches of Messrs. J. McLean (of Dudley), Blyth, Urwin, and Henderson.—Mr. McLean, who represented 160 persons, ably advocating the usefulness of such a society, and the other representatives reporting equally favourably. At Bekebe, although the proposition was opposed at first, the men at that colliery were now unanimously in its favour.

It is to be regretted that not one was present at the meeting who seemed to use every effort to sow discord; but as this was the man who has brought so much misery upon the colliers, by inciting them to extremes, it is hoped that the colliers will not be weak enough to be led away by him, more especially as his arguments are so completely overthrown by Mr. J. Baxter Langley, who is well acquainted with the working of benefit and provident societies, and who stated that he was not going to say a word on the principles of the Union, for he had not read their rules. But the experience of the world, and the teachings of common sense, were all in favour of division of labour. If this division of labour—this application of labour and skill—be good in other things, it was good in this particular case. The Union had certain objects in view, let its members that its exertions were specially directed to its objects; and for the Miners' Provident Society, let it in like manner attend to its speciality. Both would be injured by the combination probably. They were entirely different in character: for the Union was a political institution, while the Miners' Provident Society would, if properly constructed, be a scientific application of fixed principles to provide against certain calamities. He hoped that they would adhere to this view, and make the institution they proposed to form strictly in accordance with those moral laws which govern the world—the effects and operations of which had been clearly seen in the case of the colliers, who must have numbers, and avoid dividing their funds into separate boxes for each lode. The total funds should be general; for the law of average was only regular when applied to large numbers. He concluded by wishing the society success, and offering any assistance he might be enabled to give.

The questions for the consideration of the meeting were—  
What was the best form of organisation, and the most practical means of establishing the institution?

The nature and amount of support they were likely to obtain;  
What persons should be eligible as members;  
What should be the rate of contributions;  
What benefits should be allowed;  
What was the opinion of the masters, and what support they would give; and  
The propriety of having a regular advocate.

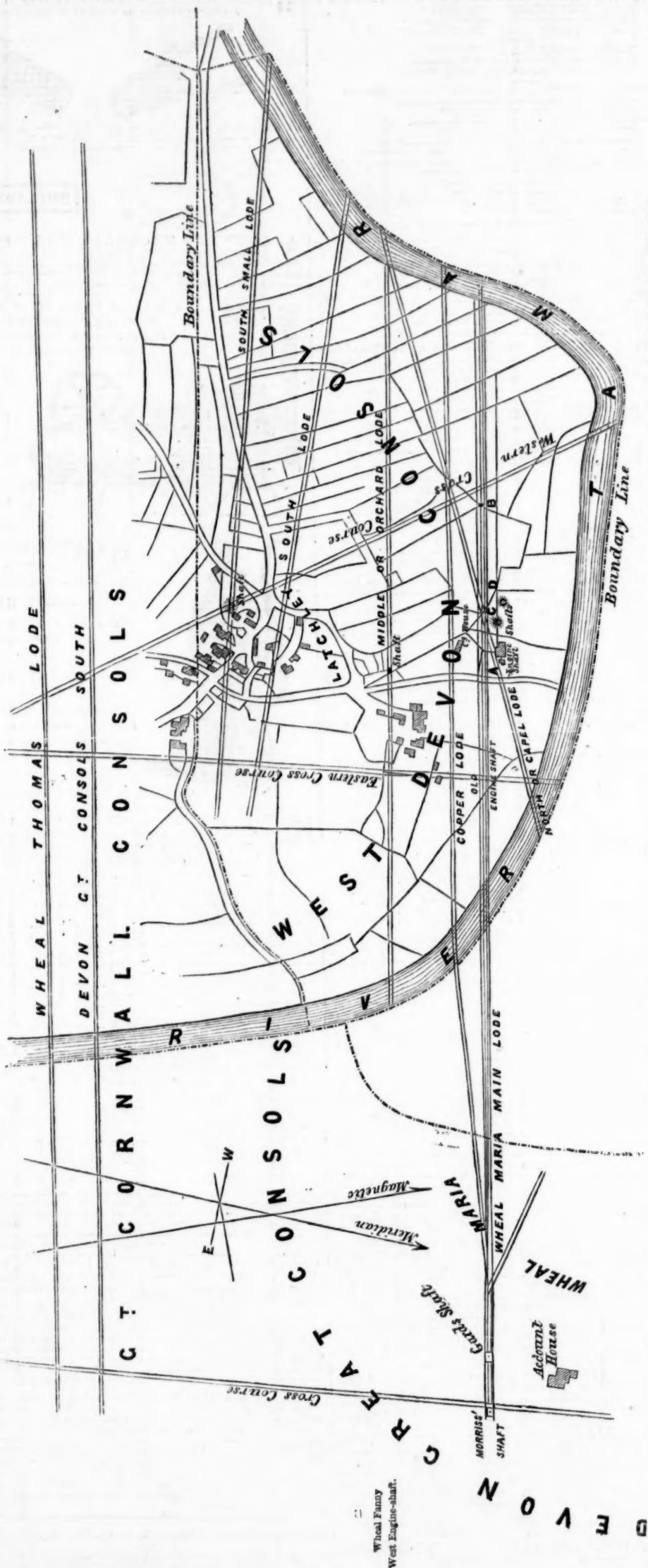
But as the meeting was unprepared to discuss the details of the plan suggested by the committee, the consideration of it was postponed until the meeting that day month.

ENGLISH AND CANADIAN MINING COMPANY.—Herbert Williams, Harvey Hill, Canada, Feb. 3: Monthly report: The board will, I doubt not, be as pleased at the intelligence as I am to communicate the discovery of a new and most promising lode during the last fortnight, at a distance of about 90 yards to the south-east of the upper barn or stable; its direction is nearly magnetic north and south, and its general trend is to the east. The lode is about 10 ft. wide, and is indicative of copper bearing. We have opened out on its back for a distance of about 40 ft., to a depth of about 8 ft. and its average width is about 4 ft., and is well defined. It is composed of a fine rich gossan, with green and blue carbonates of copper thickly dispersed throughout the entire mass, with some peach or chlorite, and some very fine prills of purple sulphure of copper, with a little quartz; the country on each side of the lode has a considerable amount of the carbonates dispersed through it for some distance. The character of the gossan is spongy and light, and certainly is of the most promising description that I have yet seen in the country, and is improving as we go up the hill. We have already taken from 2 to 3 tons of stuff from this lode, which I propose washing and trying for peroxide. In the course of a few days, and I have some hope of finding it sufficiently high to send on at once for shipment without further dressing. We have discovered in the short distance already opened out several small east and west cross-courses running into it, as also another parallel lode about 6 yards to the north of it, measuring about 8 to 10 inches wide. These lodes will not be intersected in the deep adit, their northern direction being to a point about 15 to 20 yards west of the starting point at that driftage. The discovery, however, I must not omit to state, was made while searching (under the shelter afforded by the bush from the penetrating cold wind) whether there was a lode between Morrison's adit and Gray's shaft No. 1, and running in a line near to the cottage. Mr. Hall, one of the members of the local board of direction, having visited the mines on Saturday and Monday last, we have signalled his visit by calling this lode Hall's lode, under which heading it will appear in the cost-sheets. The opening out of this is being pushed on vigorously, and you shall be duly advised the results, which are most cheering at present, and I have very great hopes of their continuing so. We took out this afternoon a solid lump of purple ore, weighing upwards of 1 cwt. I will send on to Quebec a small box of fair average samples, to be forwarded to you by Mr. Pemberton, who I believe, intends leaving for England by the next mail.—Fremont's shaft: This shaft has been sunk during the past month 2 fms. 7 in.; its total depth from the surface is 12 fms. 4 ft. 11 in. During the past fortnight we have met with in this sinking some small interstratified beds of quartz, carrying some pretty samples of yellow sulphure of copper, and fine cubes of iron pyrites. We have also met with two small leaders of quartz passing across the shaft, also carrying yellow sulphure of copper, and a small quantity of pure graphite. These leaders evidently come from the main lode, and viewing them in connection with the interstratified beds, I am inclined to the opinion that the lode is improving to the east of the shaft as we go down, and that at the 20, where we next propose cross-cutting to take it up, we may reasonably expect a deposit of yellow ore of good quality. I enclosed a list of the ore in box of samples of wood forwarded to Liverpool by Mr. John Bray, and which I trust is safe to hand by this time. I have re-set the sinking of this shaft for February at 32 ft. 10 in. per fathom, being a reduction of 25 in. per fathom on the price paid for the last month.—Harvey Hill Shaft, 10 fathom cross-cut: The end driving south on Brook lode, from this, has advanced 3 fms. 4 in., the lode having again increased to an average width of 9 in., but without a trace of copper. We have also driven north on this lode for a distance of 1 fm. 6 in. with the same result. The west cross-cut from the shaft we have driven 5 ft. 3 in., without any discovery. I have, therefore, considering the large amount of dead work that we are carrying on, and that the lode will be proved to be 20 fms. deeper in Morrison's adit, suspended operations in the Harvey Hill shaft for the present, as advised in my last monthly report.—Brook Lode Shaft: From the 13th to the end of January we stopped south of the shaft 4 fms. 3 ft. of ground, producing a pile of stuff that I estimate will yield not less than 2½ tons of ore when dressed. The lode looks well in the bottom, and I have re-set to stop for February at 6 ft. per fathom, being the same price that was paid for the last month.—Morrison's Adit: This work has advanced 4 fms. 4 ft. 8 in. during the month of January (its total length now is 38 fms. 3 fms. 5 in.) without any change or discovery to report.—Grass Shaft No. 1: This shaft has been covered in by a good temporary building, capable of being converted into a workman's cottage when done with as a covering for the shaft. The shaft has been sunk during the month 2 fms. 7 in., its depth from surface now being 5 fms. 7 in. I have re-set for the month of February at 16 ft. per fathom, by three paces working night and day, and every exertion is being made to push this part of our operations forward.—Grass Shaft No. 2: The severity of the weather has prevented our doing anything here during the month.—Harris's Shaft: In my letter of the 15th ult. I advised you that we were getting into ore ground in the east cross-cut from the 10; the end advanced during the month 2 fms. 3 in., and is not yet passed through the ground from which the samples were taken. It has all the appearance of a strong copper, and is extremely rich in the top and bottom floors, and hopes and trusts to have the whole completed by Monday or Tuesday next, after which our actual crushing operations will commence on the pile of stuff from the new or Hall's lode, to be followed by other piles on hand from Brook lode, with the skimpings and halvans, and I hope to get some amount of stuff ready for the first thaw or spring waters.

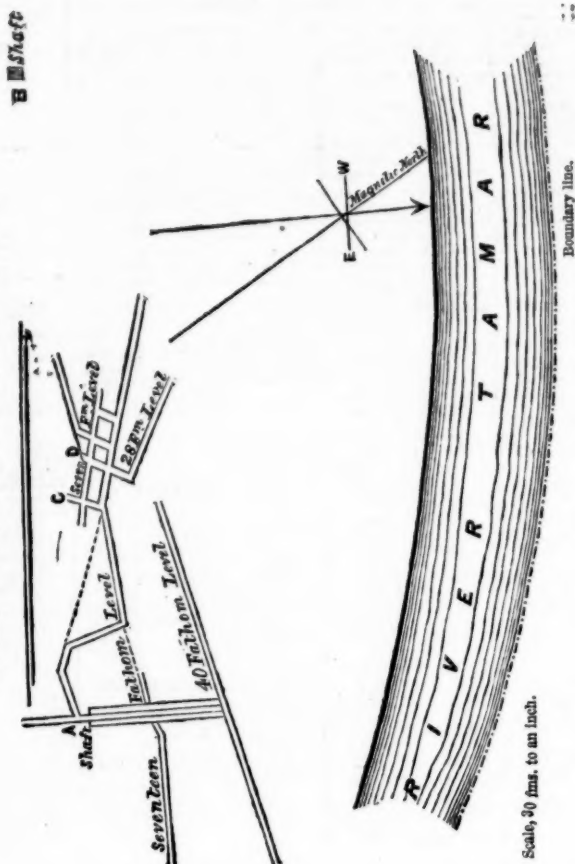
THE IRON TRADE, AND MR. S. B. ROGERS.—In the Mining Journal of Feb. 19 we were much pleased to find two columns of a leader devoted to a notice of the valuable services rendered by Mr. S. B. Rogers, of Newport, to the manufacture of the great staple of our country—iron. As the author of the most elaborate work on "Iron Metallurgy," Mr. Rogers's fame is large; but as a townsman we cannot but endorse the very high eulogium paid to this venerable benefactor of his country, who, in inventions are freely used, but are unacknowledged. May he take the initiative in getting up a substantial testimonial of their respect for our aged and respected friend. Their employers will then doubtless answer in return, ere one so deserving of their patronage vanishes from amongst us, and his inventions are lost to the community. That the press of the Principality will render its aid they may rest assured.—Star of Grant, March 12.



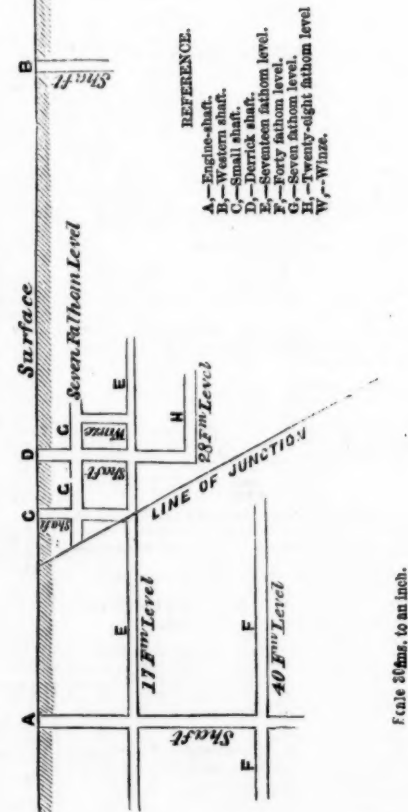
PLAN OF WEST DEVON CONSOLS, AND PART OF DEVON GREAT CONSOLS MINING SETTS.



HORIZONTAL PLAN OF WEST DEVON CONSOLS.



LONGITUDINAL SECTION OF WEST DEVON MAIN LODE.



- REFERENCE.
- A—Engine-shaft.
  - B—Western shaft.
  - C—Small shaft.
  - D—Derrick shaft.
  - E—Devon Great Consols level.
  - F—Seven fathoms level.
  - G—Forty fathoms level.
  - H—Twenty-eight fathoms level.
  - W—Wheal.

Scale 30 fms. to an inch.

**WEST DEVON CONSOLIDATED COPPER MINING COMPANY (LIMITED), CALSTOCK, COUNTY OF CORNWALL.**  
In 80,000 shares of £1 each.  
Deposit of 5s. per share to be paid to the bankers of the company on application.  
Four months to intervene between each call. No call to exceed 2s. 6d. per share.  
All liability to cease on payment of £1 per share.  
[A List of Directors will appear next week.]  
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PROSPECTUS.

This mine is situated immediately adjoining on the western boundary of the Devon Great Consols, the directors of which mine, in their Fourteenth Report, dated May 25, 1858, declared dividends to the amount of £61,440, independent of the outlay of considerable sums in other works; and stated that the copper ore returned within the last year amounted to £1,650,869 8s. 11d., and that dividends to the amount of £11,448 had been paid to the shareholders.  
The workings of the West Devon Consols are within 50 fms. of the Devon Great Consols main shaft, and on the same lodes and strata, with every possible prospect of being equally productive.  
Two hundred and fifty tons of copper ore have already been returned from the shallow lodes, and the Devon Great Consols lodes traced direct from that property through the set.  
Capt. James Richards, the present mining captain and agent of the Devon Great Con-

sols, has undertaken to superintend the workings of the West Devon Consols, after having duly inspected and reported on the same. The following is an extract of his report:—"I am of opinion that the further prosecution of this mine should be carried out in the following manner:—That the present engine-shaft on the north lode be continued, and on reaching the respective depths of 40, 52, 64, and 76 fms., levels be extended both east and west, for the purpose of proving this lode, which so well deserves an effectual trial. That the sinking the old shaft 90 fms. to the west of the engine-shaft be resumed, and the levels extended therefrom, the water from which can be drained by means of a line of rods attached to the present steam-engine. The middle lode shaft should also be sunk, and levels extended both east and west, at the same depths as advised above. The south lode should also be developed in a similar manner. 250 tons of copper ore, of rich quality, have been raised and sold. There is on the mine a 46 in. steam-engine, with a line of rods to the middle and south lode shafts, two capstans and shears, one rope, two horse-whims and rope, together with an account-house, smiths and carpenters' shop, saw-pit, &c., and a quantity of spare materials; and the machinery and pitwork generally are in good repair, and work well. In conclusion, I have to observe that—looking at these various lodes in the immediate neighbourhood, and embedded in the same mineralised strata, as that of the Devon Great Consols, and the fact of there being two cross-courses running throughout the entire width of the set, in connection with which the best courses of ore are found—if my recommendations are carried into effect, the West Devon Consols will not only become a productive but a profitable mine."  
"Devon Great Consols.—About the time of the commencement of the last working, I gave a detailed report of the extent and nature of the operations of this mine, and believing that the indications at surface and the character of the lodes underground were ex-

ceedingly promising, I expressed my opinion that if properly prosecuted it would prove productive. Since the date of that report the engine-shaft has been sunk some fathoms, and a few of the levels have been somewhat extended; but as the operations altogether have been on too limited a scale to justify the expectation of important results, I see no reason whatever to alter in the slightest degree the opinion I then gave, that on having a fair trial this will not fail to prove a profitable mine."  
JAMES RICHARDS, Managing Agent at Devon Great Consols.  
And which report is further borne out by Captain Jehu Hitchins, mining surveyor, a person of considerable eminence, and well-known in the mining world. The following is an extract from his report:—"March 5, 1859.—On reading the reports of Capts. James Richards and Rowe, I fully agree with their general tenor, in supposing that this property (West Devon Consols) is a valuable one, provided a proper amount of capital, such as it requires, and which it has not yet had, is properly laid out therein. The work already done in sinking shafts and driving levels is so much accomplished both in labour and time; and the machinery on the premises, together with a good plant of materials, which have cost a considerable sum, are so many auxiliaries towards a complete trial. Beyond the foregoing, I do not see the necessity for further remark, other than to give an estimate as required, of what I think is a sufficient amount to give this adventure a fair and sufficient exploration. I consider that to develop the main lodes to a depth of 75 fms. with levels, &c., as also trials on the others to a fair extent, can be accomplished with a capital of £10,000, if well and economically applied, during the expenditure of which no doubt but returns of copper ore will be made from the workings, so as considerably to aid the funds of the company at least, and more probably arrive at a profitable result; the outlay of which



both the reports alluded to fully advocate, with which I also not only agree but confidently believe that it is a good adventure.

JEHU HITCHINS.

Capt. Thos. Gill, who has been the mineral agent for the Duchy of Cornwall for the last seven years, but left to take a more lucrative situation in Cuba, and who is now the managing agent of Great Western Mine, and is considered by the Duchy of Cornwall as an authority of considerable eminence, also examined this mine during the period he was employed as Duchy Surveyor. The following is extracted from his report to the directors of this company:—

"This property is bounded on the east by the eastern side of the Tamar River, adjacent to the Devon Great Consols Mine, and a continuation of the same lodes of that valuable mine must pass through it. Many attempts have been made to fully develop the lodes, but without success—partly from want of capital, and other causes. The deepest part of the mine is not more than about 32 fms. perpendicular from surface, therefore it is not general to suppose that large and regular deposits of ore can be expected at such a shallow depth (except in extraordinary cases) where there are such large lodes as those in this property; and I am of opinion that if those lodes are explored to a proper depth they will prove very productive, and yield great profit to those who may invest money in the speculation, if carried on in a spirited manner, together with judicious management."

THOS. GILL, late Mineral Agent to the Duchy of Cornwall.

The directors state that this company being registered under the Limited Liability Act, the shareholders are in no way responsible or liable, and can sustain no further loss than the money invested by them, being £1 per share, which may ultimately realise a considerable profit. The plan of this property will show the relative position of the two mines, Devon Great Consols and West Devon Consols; and, if any reliance can be placed upon the highly respectable agents, Messrs. Richards, Gill, Hitchins, and others, there can be no doubt that the West Devon Consols must be a good and lasting mine, and a profitable investment to the shareholders.

Applications for the remaining shares to be made to the secretary, 76, King William-street, City.

**NEW PATENT ACT, 1852.**—Mr. CAMPIN, having advocated Patent Law Reform before the Government and Legislature, and in the pages of the *Mining Journal*, &c., is now READY TO ADVISE AND ASSIST INVENTORS IN OBTAINING PATENTS, &c., under the NEW ACT.

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